

DOCKET FILE COPY ORIGINAL
LAW OFFICES
HALEY BADER & POTTS P.L.C.
4350 NORTH FAIRFAX DR., SUITE 900
ARLINGTON, VIRGINIA 22203-1633
TELEPHONE (703) 841-0606
FAX (703) 841-2345
E-MAIL: haleybp@haleybp.com

RECEIVED

SEP 23 1997

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

MICHAEL H. BADER
ADMITTED IN VA AND D.C.

September 23, 1997

OUR FILE NO.
0040-113-63

Mr. William F. Caton, Acting Secretary
Federal Communications Commission
Washington, D.C. 20554

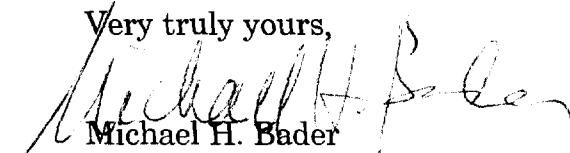
Re: MM Docket No. 87-268

Dear Mr. Caton:

Transmitted herewith is an original and fourteen copies of the
Opposition of KOLO-TV to Sierra Broadcasting in connection with the above-
referenced proceeding.

Kindly communicate any questions concerning this matter to this office
directly.

Very truly yours,


Michael H. Bader

MHBapp
Enclosure

0014
US

Before The

Federal Communications Commission

Washington, D.C. 20554

RECEIVED

SEP 23 1997

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

In The Matter Of)

)

Advanced Television Systems)

)

and Their Impact Upon the)

)

Existing Television Broadcast)

)

Service)

)

MM Docket No. 87-268

TO: The Commission *en banc*Opposition of KOLO-TV to
Sierra Broadcasting

Stephens Group, Inc., licensee of KOLO-TV ("KOLO-TV"), NTSC Channel 8, Reno, Nevada, hereby files this Opposition to the Supplement filed by Sierra Broadcasting ("Sierra") on September 8, 1997, seeking to substitute DTV Channel 9 at Slide Mountain for DTV Channel 33, at its present transmitter location, as set forth in the Table of Allotments contained in the Commission's *Sixth Report and Order* in this proceeding.¹

In support of this Opposition, KOLO-TV submits:

**I. ALLOCATION OF DTV CHANNEL 9 ON SLIDE MOUNTAIN
WILL CAUSE NEW INTERFERENCE**

1. As the attached engineering statement of Hammett & Edison demonstrates, allocating DTV Channel 9 to Sierra, to be operated from

¹ *Sixth Report and Order*, MM Docket No. 87-268, adopted April 3, 1997, FCC 97-115 (released April 21, 1997).

the Slide Mountain antenna facility, will create new interference to KQED, NTSC Channel 9, San Francisco, California. According to this study KQED can expect to lose approximately 250,000 viewers, or 5.2 percent of its viewing audience, if the Commission allows Sierra to operate Channel 9 from the Slide Mountain site.²

**II. IF THE COMMISSION DECIDES THAT DTV CHANNEL 9
CAN BE ALLOCATED FOR USE ON SLIDE MOUNTAIN
THEN IT SHOULD BE ALLOCATED TO KOLO-TV**

2. If the Commission concludes that DTV Channel 9 can be operated from Slide Mountain without introducing unnecessary interference, then the Commission should allocate Channel 9 to KOLO-TV rather than Sierra. There are fundamental technical reasons for doing so.

3. First, KOLO-TV would note that in the *Sixth NPRM*, the original FCC Table of Allotments allocated DTV Channel 9 to KOLO-TV. This was done based on the assumption that where an adjacent DTV channel had to be allocated, it was preferable to allocate it to the adjacent NTSC channel. This assumption remained true in the *Sixth*

² If the Commission accepts Sierra's proposal, Sierra will have to operate DTV Channel 9 from Slide Mountain, rather than from its existing transmitter site, some 33 kilometers away, because DTV Channel 9 will be first adjacent to KOLO-TV's NTSC Channel 8. As discussed more fully in Section II, because of the first adjacency problem, if the Commission concludes that Channel 9 should be allocated for DTV use in Reno, the Commission should allocate that channel for KOLO-TV's use, and find another channel for Sierra.

Report and Order.³ Licensing adjacent frequencies to the same entity is necessary to ensure that adjacent interference is avoided. As the attached engineering statement describes, adjacent DTV channels will have to closely monitor the companion NTSC channel to make sure that they keep the proper frequency separation. Further, if the NTSC channel has to reduce power for any reason, it will encounter interference from the DTV signal. While a co-owned NSTC-DTV adjacent operation will be willing to reduce the DTV power to eliminate interference while the NTSC signal's power is reduced, in a competitive market it is highly unlikely that a competing DTV station would be willing to reduce power to avoid such interference.⁴ For this reason, the Commission's preference for allocating adjacent channels to the same licensee should be followed in this case, if the Commission concludes that DTV Channel 9 should be allocated to Reno, and operated from Slide Mountain.

**III. THIS RULEMAKING PROCEEDING IS NOT THE
PROPER FORUM FOR CHANGING BOTH A
CHANNEL AND A TRANSMITTER SITE**

4. What makes Sierra's request different from others in the present proceeding is that not only does Sierra seek a different channel

³ *Sixth Report and Order*, ¶ 85, ¶90

⁴ It would be especially worrisome to KOLO-TV to have DTV Channel 9 operated from Slide Mountain by Sierra. Since Sierra's main transmitter is located some 33 kilometers away, KOLO-TV has no assurance that in the early days of DTV implementation that Sierra will have the manpower or remote capabilities at the Slide Mountain site to react quickly to interference problems with KOLO-TV. More importantly, from a competitive standpoint, why should they? Human nature being what it is, KOLO-TV submits that it

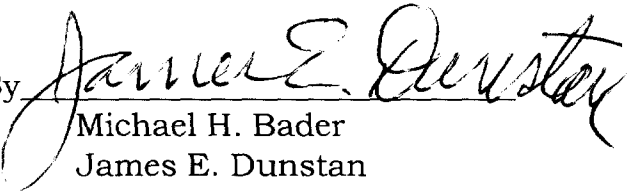
(as several hundred other petitioners also have requested), it also seeks to change transmitter sites, moving some 33 kilometers closer to the larger California markets. Changing both channels and transmitter sites in one motion introduces new interference possibilities that simply should not be dealt with in the context of the present proceeding. Given the probable changes that will occur in the Table before this proceeding is over, it is difficult to estimate the impact of this double change on other broadcasters. The *Sixth Report and Order* provides a mechanism for changing channels once the Table of Allotments has been finalized. The Commission should require Sierra to follow those procedures, rather than try to accomplish both a channel and transmitter change within the context of this proceeding. The Commission should therefore reject Sierra's proposal at this stage of the proceeding.

WHEREFORE, the above premises considered, KOLO-TV hereby requests that the Commission reject the request by Sierra to

allocate DTV Channel 9 to Reno, assign it to Sierra, and allow Sierra to operate this channel from Slide Mountain.

Respectfully submitted,

STEPHENS GROUP, INC.

By 
Michael H. Bader
James E. Dunstan

Its Attorneys

HALEY, BADER & POTTS P.L.C.
Suite 900
4350 North Fairfax Drive
Arlington, VA 22203-1633
703/841-0606
Fax 703/841-2345
E-Mail: [mbader@haley bp.com](mailto:mbader@haleybp.com)
INTERNET: <http://www.haleybp.com>

September 23, 1997

**Station KOLO-TV
NTSC Channel 8
Reno, Nevada**

**Engineering Exhibit
in Support of Opposition to
Supplemental Petition for
Reconsideration**

September 23, 1997

©1997 All rights reserved.

Station KOLO-TV • NTSC Channel 8 • Reno, Nevada**Statement of Dane E. Ericksen, P.E., Consulting Engineer**

The firm of Hammett & Edison, Inc., Consulting Engineers, has been retained by DR Partners, licensee of Station KOLO-TV, NTSC Channel 8, Reno, Nevada, to prepare an engineering exhibit in support of an Opposition to the Supplemental Petition for Reconsideration filed by Sierra Broadcasting Company.

Sierra Proposal

Sierra Broadcasting Company ("Sierra"), licensee of TV Station KRNK, NTSC Channel 4, Reno, Nevada, proposes substitution of DTV Channel 9 for its Sixth Report and Order assigned DTV Channel 33. In its September 8, 1997, Supplemental Petition, Sierra claims that substitution of DTV Channel 9 with an effective radiated power ("ERP") of 16.3 kW using a directional antenna aimed at 40°T, and located at Slide Mountain, would allow KRNK to operate with no significant interference to the requested DTV Channel 9 coverage in the Reno area from other co-channel and adjacent-channel NTSC stations or DTV allotments.

**Proposed Substitution Would Cause Prohibited New Interference
to KQED, NTSC Channel 9, San Francisco**

Sierra therefore requests not only a change in its DTV channel allotment, but also a 31.0-kilometer (19.2-mile) relocation from its NTSC site at Red Peak, with a site elevation of 5,447 feet AMSL, to Slide Mountain, with a site elevation of almost 10,000 feet AMSL.* Although the proposed Slide Mountain site would 282.9 kilometers from TV Station KQED, NTSC Channel 9, San Francisco, California, and thus fully spaced to that station, the safety margin would be only 9.3 kilometers. As shown below, because of the extreme height of Slide Mountain, that spacing is insufficient to preclude interference to KQED, using the interference calculating protocols spelled out in the Sixth Report and Order to MM Docket 87-268 ("DTV Table of Allotments") and in OET Bulletin 69.

* The coordinates given in the KRNK Supplemental Petition, 39° 18' 45", 119° 53' 00" W, plot to the 9,640-ft AMSL contour line of the northernmost of the three Slide Mountain peaks on the Mt. Rose topographic map. This means that the claimed antenna center-of-radiation height of 2,925 m (9,596 feet) AMSL is either 13.3 meters underground, or that the claimed coordinates for the new "antenna farm" site are incorrect. We suspect the latter, in that coordinates that end in 0 or 5 are often estimated. The maximum elevation of the northernmost peak of Slide Mountain is 9,698 feet (2,956 m) AMSL.

Station KOLO-TV • NTSC Channel 8 • Reno, Nevada

The directional transmitting antenna proposed by Sierra is shown in the attached Figure 1. As shown by the attached Figure 2, use of DTV Channel 9 at the proposed Slide Mountain coordinates, with a center-of-radiation height of 2,925 m AMSL and 845 m HAAT, would cause interference to the following stations:

<u>Station Receiving Interference from Proposed D09</u>	<u>Land Interference Area</u>	<u>Interference Population</u>
KOLO-TV, N08, Reno, NV	8.1 sq. km	0 persons
KFSN, D09, Fresno, CA	24.1	0
KIXE-TV, N09, Redding, CA	0	0
KQED, N09, San Francisco, CA	1,967	284,387
App., BPCT-970331LW, N09, Tonopah, NV	332	9
App., BPCT-960920YC, N09, Tonopah, NV	892	0
App., BPET-960920KR, N09, Tonopah, NV	284	9
App., BPCT-960920YB, N09 Tonopah, NV	196	9
KXTV, N10, Sacramento, CA	0	0

Thus, while Sierra may be correct that it would receive only trivial interference to its DTV coverage if the proposed substitution of both channel and site was granted, the reciprocal case would not be true for KQED. The KQED interference would represent 5.2% of that station's NTSC Grade B population, which cannot be construed as "*de minimus*," let alone meet the criteria spelled out in Paragraph 222 of the Sixth R&O, namely that any change to the DTV Table of Allotments adopted in the Sixth R&O will be granted only if it causes no additional interference to other stations.

If Use of DTV Channel 9 at Slide Mountain Is To Be Allowed, Its Use by KOLO-TV Would Be More Technically Appropriate

I note that in the Sixth Further Notice of Proposed Rule Making ("Sixth FNPRM") to MM Docket 87-268 KOLO-TV was tentatively assigned DTV Channel 9, but in the Sixth R&O that assignment got changed to DTV Channel 23. If the Commission's position is that fully-spaced NTSC or DTV stations do not require detailed studies showing "no additional interference," then it would be more in tune with the stated goals of the Sixth R&O to assign DTV Channel 9 to KOLO-TV rather than to KRNVT, as such assignment would then meet the presumption of co-location with the NTSC transmitter site, and would provide KOLO-TV with a first-adjacent DTV allotment. As discussed at Paragraph 195 of the Sixth R&O, because of the requirement for adjacent-channel NTSC and DTV stations to maintain a precise $5.082138 \text{ MHz} \pm 3 \text{ Hz}$ relationship between the visual carrier of a lower-adjacent channel NTSC station to the pilot frequency of an upper-adjacent DTV signal, there is a technical preference to assigning an upper-adjacent DTV

Station KOLO-TV • NTSC Channel 8 • Reno, Nevada

channel to a lower-adjacent NTSC station, so that the NTSC and DTV carrier frequencies can be locked to a common frequency standard.


Summary

The Sierra Supplemental Petition failed to address the issue of interference to other NTSC and DTV stations if DTV Channel 9 was to be used at Slide Mountain, and such use would cause non-trivial interference to KQED. In the event that KQED and other fully-spaced stations are deemed only to be entitled to the interference protection resulting from being fully-spaced, then the use of DTV Channel 9 by KOLO-TV, already at Slide Mountain, and a lower-adjacent NTSC Channel 8 station, makes more technical sense than assigning that channel to KRNK.

List of Figures

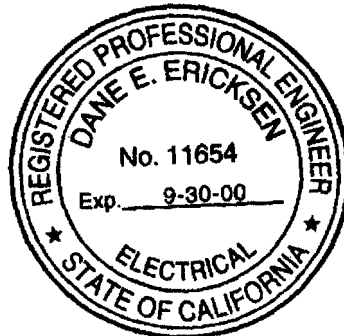
In carrying out these engineering studies, the following attached figures were prepared under my direct supervision:

1. Directional antenna pattern proposed by Sierra for DTV Channel 9 at Slide Mountain
2. Interference study for DTV Channel 9 at Slide Mountain.



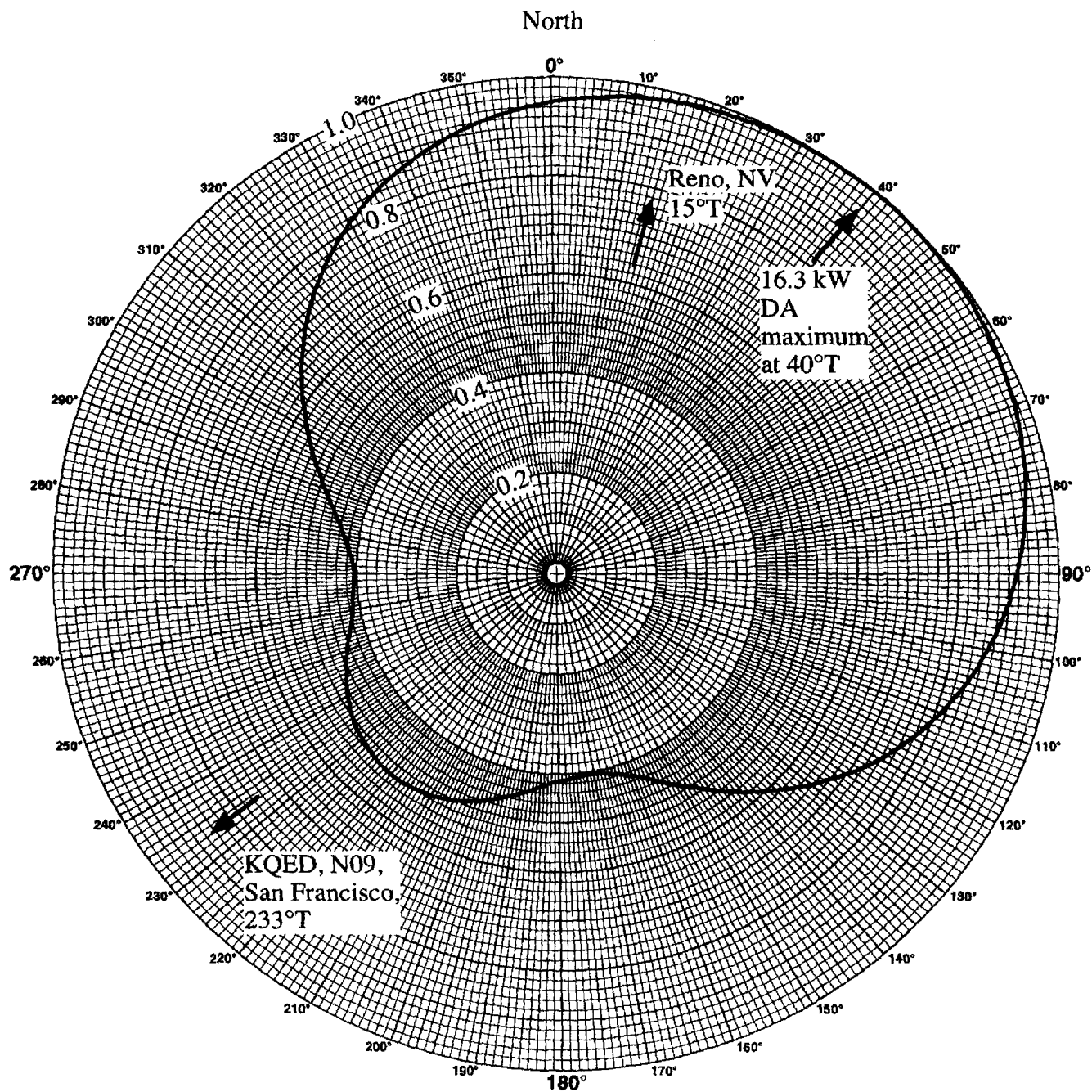
Dane E. Ericksen, P.E.

September 23, 1997



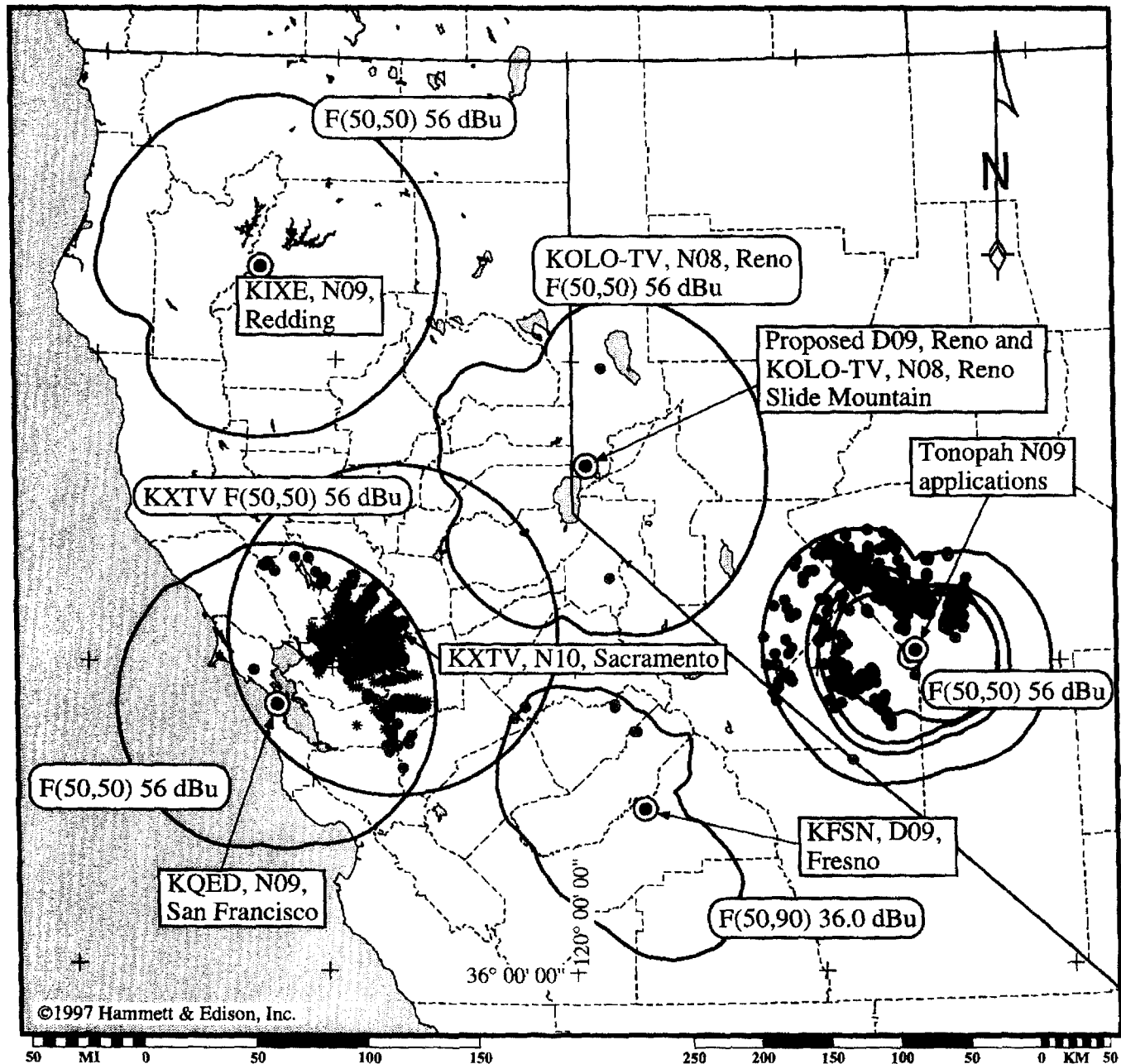
Station KOLO-TV • NTSC Channel 8 • Reno, Nevada

**Directional Antenna Pattern Proposed by TV Station KRNV,
Channel N04, Reno, for D09 at Slide Mountain**



Station KOLO-TV • NTSC Channel 8 • Reno, Nevada

Interference Conditions for KRNK Proposal:
 DTV Channel 9 at Slide Mountain
 16.3 kW (DA) with C.O.R. = 2,925 m AMSL, 845 m HAAT



* = Interference (with population in cell)
 • = Interference (without population in cell)

Geographic coordinate marks shown at 2-degree increments. Map data taken from Sectional Aeronautical Charts, published by the National Ocean Survey.

DTV.IXSTUDY™ Analysis Methodology

Implementation of FCC's Interference-Based Allocation Algorithm

On April 21, 1997, the Federal Communications Commission released its Sixth Report and Order to Mass Media Docket No. 87-268, establishing a final Table of Allotments for the transition from analog NTSC television service to a digital television ("DTV") service. The Commission utilized a complex set of computerized analysis tools to generate the DTV allotment table and added FCC Rules Section 73.623(b)(2), requiring that similar tools be employed to analyze individual DTV station assignments with regard to their potential interference to other DTV stations, DTV allotments, and existing or authorized NTSC facilities. Hammett & Edison has developed computer software to perform this function, based on an examination of the FCC software source code.

For any given NTSC or DTV station to be studied, the FCC analysis model first determines the location of the conventional F(50,50) Grade B contour of the NTSC station, or of the NTSC station associated with an assigned DTV station, using pattern information contained in the FCC engineering database and an assumed antenna elevation pattern. The model assumes that contour as an envelope, outside of which no protection from interference is implied or afforded. The location of the Grade B contour is also used to determine the assigned power for the DTV station, once again using conventional methods found in FCC Rules Section 73.699, Figures 9 and 10, but determining the power necessary on a radial basis to generate the associated DTV coverage contour (41 dBu for UHF, 36 dBu for high VHF Channels 7-13, and 28 dBu for low VHF Channels 2-6), for the assigned DTV channel. The maximum power determined using this method was assigned as the DTV operating power, provided it was calculated to be above established minimum power levels; otherwise, a minimum power level was assigned. Note that the use of this method usually creates a directional antenna pattern, even for DTV assignments to presently omnidirectional NTSC TV stations. The FCC requires that a DTV facility employ an antenna design that meets the calculated pattern, or that a nondirectional antenna be employed that does not exceed the directional pattern envelope in any direction, unless the creation of no new interference can be demonstrated.

In addition to the use of the Grade B envelope and an assumed directional transmitting antenna for all DTV facilities, the model assumes the use of directional receiving antennas at each studied location, or "cell." The characteristics of the receiving antennas are different not only for the low VHF, high VHF, and UHF frequency bands, but also for NTSC and DTV receiving situations, where, based on the FCC model, more directive antennas are employed for analysis of DTV reception.



The FCC analysis technique employs terrain-sensitive calculation methods based on Version 1.2.2 of the ITS Irregular Terrain Model, also known as the Longley-Rice model. For each NTSC or DTV station to be studied, a grid of cells, two kilometers on a side, fills the associated Grade B contour. The program first determines which of the cells is predicted to receive service from the associated station, using Longley-Rice with F(50,50) statistical weighting for NTSC stations and F(50,90) statistical weighting for DTV stations. Cells determined to have no service are not studied for interference from other stations.* Once cells having service are determined, the software analyzes potential interference from other NTSC or DTV stations, again using the Longley-Rice propagation algorithm and F(50,10) statistical weighting for all potential interfering signals. Each cell is evaluated using the desired-to-undesired ratios presented in FCC Rules Section 73.623 for each channel relationship, and cells determined to have interference are flagged and summed with the study results of other cells, resulting in the generation of total interference area figures and tabulations of total population contained within the summed cells.

The Hammett & Edison analysis software program employs all of the analysis features described above, as well as several other more subtle elements employed in the FCC allotment program. Additionally, the Hammett & Edison program provides a graphical element that allows the identification of all interference cells on a map with an associated tabulation, and the program generates a DTV antenna pattern envelope that shows areas that can be maximized without creating interference in any cells that were not already receiving interference. The program can be used to test implementation scenarios that involve changes to antenna height, antenna pattern, channel number, and transmitter location. Additionally, the program has the capability to determine coverage areas of DTV and NTSC stations, with interference cells omitted. The Hammett & Edison program can also identify cells that fall in major bodies of water, based on digitized map data, summarizing those cells separately in an interference study or excluding them from a coverage study. Arguably, cells in water do not require protection from interference.

* It is noted that the Longley-Rice model is not always capable of determining, within certain confidence limits, whether a particular cell has service. In such cases, the Longley-Rice algorithm returns an error code; the FCC method for handling such error codes is to assume the associated cells have interference-free service, and as such, are not considered further. This assumption is presently being scrutinized by Hammett & Edison to determine its validity and to identify possible situations where significant actual interference areas may be overlooked from station studies.

Affidavit

State of California |
County of Sonoma | ss:

Dane E. Ericksen, being first duly sworn upon oath, deposes and says:

1. That he is a qualified Registered Professional Engineer, holds California Registration No. E-11654, which expires on September 30, 2000, and is employed by the firm of Hammett & Edison, Inc., Consulting Engineers, with offices located near the city of San Francisco, California,
2. That he graduated from California State University, Chico, in 1970, with a Bachelor of Science Degree in Electrical Engineering, was an employee of the Field Operations Bureau of the Federal Communications Commission from 1970 to 1982, with specialization in the areas of FM and television broadcast stations and cable television systems, and has been associated with the firm of Hammett & Edison, Inc., since October 1982,
3. That the firm of Hammett & Edison, Inc., Consulting Engineers, has been retained by DR Partners, licensee of Station KOLO-TV, NTSC Channel 8, Reno, Nevada, to prepare an engineering exhibit in support of an Opposition to the Supplemental Petition for Reconsideration filed by Sierra Broadcasting Company ,
4. That such engineering work has been carried out by him or under his direction and that the results thereof are attached hereto and form a part of this affidavit, and
5. That the foregoing statement and the report regarding the aforementioned engineering work are true and correct of his own knowledge except such statements made therein on information and belief and, as to such statements, he believes them to be true.

Dane E. Ericksen, P.E.

Subscribed and sworn to before me this 23rd day of September, 1997

ORIGINAL COPY NOTARIZED

CERTIFICATE OF SERVICE

The undersigned, an employee of Haley, Bader & Potts P.L.C.
hereby certifies that the foregoing document was mailed this date by
First Class U.S. Mail, postage prepaid, or was hand-delivered, to the
following:

Chief
Office of Engineering and Technology
Federal Communications Commission
Washington, D.C. 20554

James R. Bayes, Esquire
Jerry V. Haines, Esquire
Wiley, Rein & Fielding
1776 K Street, N.W.
Washington, D.C. 20006
Attorneys for Sierra Broadcasting Company


Pat Payne

September 23, 1997